

# AANAT siRNA (m): sc-61929

## BACKGROUND

AANAT (Arylalkylamine N-acetyltransferase), also called Serotonin N-acetyltransferase (SNAT) or Serotonin acetylase, is a member of the acetyltransferase superfamily. It is almost exclusively expressed in the pineal gland and the retina. AANAT activity is high at night and low during the day due to the 10 to 100-fold increase in the amount of active AANAT at night. Retinal exposure to light causes cAMP levels to decrease in photoreceptor cells and, as a result, AANAT is targeted for degradation by proteasomal proteolysis. AANAT plays an important role as the rate limiting enzyme in melatonin synthesis. It is responsible for catalyzing the N-acetylation of serotonin to N-acetylserotonin, which is then converted to melatonin by hydroxyindole-O-methyltransferase. Melatonin is an important hormone that is involved in many physiological processes including immune function, seasonal reproduction, retinal physiology and circadian entrainment.

## REFERENCES

- Shi, Q., et al. 2004. Embryonic and post-embryonic expression of arylalkylamine N-acetyltransferase and melatonin receptor genes in the eye and brain of chum salmon (*Oncorhynchus keta*). *Gen. Comp. Endocrinol.* 136: 311-321.
- Klein, D.C. 2006. Evolution of the vertebrate pineal gland: the AANAT hypothesis. *Chronobiol. Int.* 23: 5-20.
- Simonneaux, V., et al. 2006. Rat and Syrian hamster: two models for the regulation of AANAT gene expression. *Chronobiol. Int.* 23: 351-359.
- Ho, A.K., et al. 2006. Opposite effects of proteasome inhibitors in the adrenergic induction of arylalkylamine N-acetyltransferase in rat pinealocytes. *Chronobiol. Int.* 23: 361-367.
- Tosini, G., et al. 2006. Regulation of arylalkylamine N-acetyltransferase (AANAT) in the retina. *Chronobiol. Int.* 23: 381-391.
- Coon, S.L., et al. 2006. Evolution of arylalkylamine N-acetyltransferase: emergence and divergence. *Mol. Cell. Endocrinol.* 252: 2-10.

## CHROMOSOMAL LOCATION

Genetic locus: Aanat (mouse) mapping to 11 E2.

## PRODUCT

AANAT siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see AANAT shRNA Plasmid (m): sc-61929-SH and AANAT shRNA (m) Lentiviral Particles: sc-61929-V as alternate gene silencing products.

For independent verification of AANAT (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-61929A, sc-61929B and sc-61929C.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

AANAT siRNA (m) is recommended for the inhibition of AANAT expression in mouse cells.

## SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10  $\mu$ M in 66  $\mu$ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor AANAT gene expression knockdown using RT-PCR Primer: AANAT (m)-PR: sc-61929-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

- Yang, M., et al. 2019. AANAT knockdown and melatonin supplementation in embryo development: involvement of mitochondrial function and DNA methylation. *Antioxid. Redox Signal.* 30: 2050-2065.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.